PART 625 MINERAL WELL PERMIT APPLICATION

Republic Services of Michigan I, LLC

Class I Non-Hazardous Deepwells

Carleton Farms Landfill
New Boston, Michigan
T4S R8E Section 36
Wells IW#1-36N & IW#2-36E
EPA Permit # TBD
MDEQ Permit # TBD

October 2019
Revised May 2020
Revised January 2021
Revised June 2021

Prepared by:

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A. Well Identification and Project Description

A.1 Describe in detail the purpose of the well and its anticipated life expectancy

Through the submittal of this application, Carleton Farms Landfill (CFL), owned by Republic Services of Michigan I, LLC, requests authorization from the Michigan Department of Environment, Great Lakes, and Energy (EGLE) to install and operate two non-hazardous disposal wells located at the Carleton Farms Landfill (CFL) pursuant to the applicable EGLE Mineral Well regulations as specified in the Natural Resources and Environmental Protection Act No. 451, Part 625 (as amended). The wells (IW#1-36N and IW#2-36E) will be located in Wayne County within the active CFL site boundary, located in T4S, R8E, Section 36. Well IW#1-36N will be located 623 feet from the north line and 2,585 feet from the west section line of Section 36; well IW#2-36E will be located 1,471 feet from the south line and 615 feet from the east section line of Section 36. A map identifying the facility and well locations is included as Figure A.4-1 at the end of this section. There are no known areas of groundwater contamination within the CFL property, as demonstrated by the routine hydrogeologic monitoring program.

All applicable information, figures, and forms as identified by the EGLE Permit Application Instructions for Disposal, Storage, or Brine Production Wells are included in this document. **Section A** includes all information pertaining to Well Identification and Project Description, including items 1-15 (i.e., purpose of the well through description of the planned coring program). **Section B** includes all additional information required for an application for a permit to drill and operate a disposal well, including items 1-17. This well application is for two single-source, non-commercial, non-hazardous wells. Note that the application is not being sought to drill and operate storage wells or for the production of brine (or conversion of wells for this purpose), and this is also addressed in **Section B.** Figures and forms referenced in each subsection (e.g., Section A.1) are included at the end of that subsection. Also note that the guidance showed two items B.2, both numbered “2”, so this document presents 17 elements under Section B, not 16 as numbered in the Guidance (http://michigan.gov/egle). For completeness, Section B also addresses the fact that permits for well storage (B1.18) and for the production of artificial brine (B.19) are not being requested.

The proposed disposal wells at the Carleton Farms Landfill (hereafter referred to as CFL IW#1-36N and IW#2-36E) will be used for the injection of landfill leachate and landfill gas condensate from the site, well maintenance and testing fluids associated with these wells, and storm water runoff generated at the facility. Landfill leachate is generated by infiltration of precipitation onto solid waste within the landfill; precipitation may dissolve (or leach) material within the solid waste, resulting in leachate composed almost entirely of water, with the balance being dissolved salts such as potassium, sodium, chloride, and bicarbonate, as well as organics and other inorganic constituents (e.g., ammonia). The total dissolved solids (TDS) component of the landfill leachate will primarily originate from the non-hazardous landfill waste, and injectate composed of this leachate may also include small amounts of chemical additives (e.g., scaling inhibitors,

biocides, etc.) required for proper system operations and maintenance. Landfill gas is naturally generated by biodegradation of solid waste and is composed primarily of methane and carbon dioxide. As the landfill gas cools within the collection system, condensate is generated and may also be disposed of with the landfill leachate. The non-hazardous fluid generated on-site from the leachate and gas collection system and landfill activities will be injected into wells IW#1-36N and IW#2-36N. If needed, insignificant volumes of storm water, local groundwater derived from the landfill site, and fluids derived from or necessary for the maintenance and repair of the wells may also be injected. Fluids will be transferred by flowline from the capture system units to above ground storage tanks (AST) where the leachate, gas condensate, and fluids are comingled prior to injection. The collection system is anticipated to constitute the majority of the total fluid volume. Fluid to be injected is collected at the leachate collection system, then is transferred by pipeline to a leachate AST(s). In addition to the leachate collection system, water collected from the landfill gas condensate collection system will be added to the existing leachate AST. These gathering lines and the AST already exist on site as part of current leachate and condensate management.

Fresh water aquifers in the vicinity of this well are to be protected by multiple strings of casing and cement. Injectate will be injected under gravity flow or will be delivered to the injection formation under positive pressure flow through steel tubing and a packer. The injection zone includes formations from the deepest Mt. Simon Sandstone to the base of the Black River Formation. CFL only intends to complete the Franconia/Dresbach through the Mt. Simon as the injection interval. The overlying confining zone is the Utica Shale through the base of the Black River Formation.

The wells will have surface casing extending into the Bass Islands Group, intermediate casing extending into the Clinton Formation, and long-string protective casing extending into the injection interval, with an open hole completion in the Franconia/Dresbach, Eau Claire, and Mt. Simon below the long-string protective casing. The annulus area between the protective casing and the injection tubing string will be filled with inhibited fresh water. Annulus pressure will be continuously monitored to detect any leaks in the tubing or casing, and annulus pressure will be maintained at pressures of more than 100 psi above the tubing pressure.

CFL intends to operate these wells for a period of up to 20 years. Project life may be altered in the future based on the continued operation of the Carleton Farms Landfill.

A.2 Notification: At the same time as submitting the permit application, mail via first-class United States mail, a copy of the first page of the permit application and cover letter to the clerk of the township and the surface owner of record of the land on which the well is to be located.

A letter has been prepared and submitted to the Clerk of Sumpter Township conveying a copy of the first page of this permit application. The permit applicant is the owner of the land on which the well is to be located, and therefore no submittal to the landowner is required.

At the end of this section a copy of the Cover Letter is presented, notifying the Clerk of Sumpter Township that an Application for Permit to Drill/Deepen/Convert, and Operate a Well has been submitted to the following address:

Ester Hurst
23480 Sumpter Rd
Belleville, Michigan 48111
734-461-6441

Republic Services of Michigan I, LLC
28800 Clark Road New Boston, MI 48166
o 734-271-6147 republicservices.com

October 31, 2019

Ms. Ester Hurst
23480 Sumpter Rd
Belleville, MI 48111
734-461-6441

Dear Ms. Hurst:

Republic Services of Michigan I, LLC, Carleton Farms Landfill, has submitted an Application to Drill/Deepen/Convert and Operate a Mineral Well for non-hazardous fluid disposal to the Michigan Department of Environmental Quality. The two proposed wells will be located at the following address:

28800 Clark Road
New Boston, MI 48164

Carleton Farms Landfill will own and operate the wells on property owned by its parent company, Republic Services of Michigan I, LLC, and intends to only use these wells to manage non-hazardous fluids generated at the Carleton Farms Landfill facility. As required by Part 625 of Act 451 PA 1994, as amended, attached please find a copy of the first page of the permit application for your records. Please contact me at the following address and telephone number should you have any questions or if we can be of assistance.

James Reese
Republic Services of Michigan I, LLC
Carleton Farms Landfill
28800 Clark Road
New Boston, MI 48164
(734) 271-6142

Sincerely,

J. Bobby Reese
Environmental Manager

A.3 Form EQP 7200-1, Application for Permit to Drill, Deepen, Operate, with an original signature from the applicant or the applicant's agent. See instructions on reverse of form.

A completed Application for Permit to Drill, Deepen, or Operate the Carleton Farms Landfill wells is presented on Form EQP 7200-01 for both IW#1-36N and IW#2-36E. Two completed and signed forms for both wells are attached at the end of this section.

EGLE MICHIGAN DEPARTMENT OF ENVIRONMENT, GREAT LAKES, AND ENERGY - OIL, GAS, AND MINERALS DIVISION

APPLICATION FOR PERMIT TO: ☒ DRILL ☐ DEEPEN ☐ CONVERT AND OPERATE A WELL

By authority of Part 615 or Part 625 of Act 451 PA 1994, as amended. Non-submission and/or falsification of this information may result in fines and/or imprisonment.

1a. Part 615 Supervisor of Wells: ☐ Oil and Gas ☐ Brine Disposal ☐ Hydrocarbon Storage ☐ Injection for Secondary Recovery

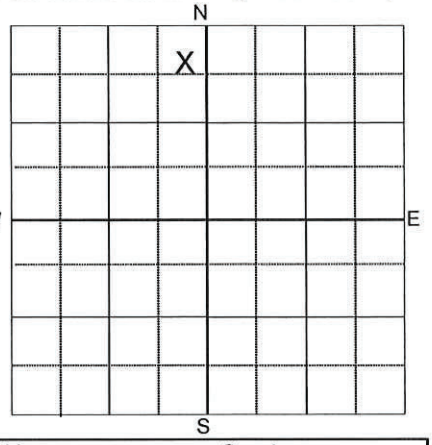
1b. Part 625 Mineral Wells: ☒ Waste Disposal ☐ Brine Production ☐ Processed brine disposal ☐ Storage ☐ Test, fee sched. on rev.

1c. Fee enclosed: ☒ Yes ☐ No, revision of application ☐ No, leg of horz drainhole

2. List all previous permit numbers

3. Fed. ID. No. (do not use SSN): 65-0872399

Locate well and outline drilling unit on section plat



4. Conformance bond: ☐ Blanket ☒ Single well

5. ☐ Attached ☒ On file

6. Bond number: 880309

7. Bond amount: $121,000.00

8. Applicant (name of permittee as bonded): Republic Services of Michigan I, LLC

9. Address: Carleton Farms Landfill, 28800 Clark Road, New Boston, MI 48164

Phone: (734) 654-3615

I authorize EGLE 4 additional days to process this application. ☒ Yes ☐ No

10. Lease or well name (be as brief as possible): Carleton Farms Landfill

Well number: IW#1-36N

11. Surface owner ☒ Private ☐ State ☐ Federal ☐ Indian ☐ Other, identify: Republic Services of Michigan, LLC

12. Surface location: NE 1/4 of NE 1/4 of NW 1/4 of Sec 36 T 4S R 8E — Township: Sumpter — County: Wayne

13. If directional, bottom hole location: 1/4 of 1/4 of 1/4 of Sec T R — Township — County

14. The surface location for this well is 623 feet from **nearest** (N/S) N_____ section line AND 2,585 ____ feet from **nearest** (E/W) W_____ section line

15. Is this a directional well? ☒ No ☐ Yes If yes, complete line15. The bottom hole location for this well is _____ feet from **nearest** (N/S) _____ section line AND _____ feet from **nearest** (E/W) _____ section line

16. The bottom hole location (whether straight or directional) of this well is 623 feet from **nearest** (N/S) N_____ drilling unit line AND 2,585 ____ feet from **nearest** (E/W) W_____ drilling unit line

17. Kind of tools: ☒ Rotary ☐ Cable ☐ Combination

18. Is sour oil or gas expected? ☒ No ☐ Yes ☐ H_2S Cont. plan enclosed

19. Base of lowest known fresh water aquifer: Formation Base of Bois Blanc Depth 400'

20. Intended total depth: MD 3,827 ft BGL TVD 3,827 ft BGL

21. Formation at total depth: Mt. Simon

22. Producing/injection formation(s): Mt. Simon-Franconia

23. Objective pool, field, or project: Mt. Simon-Franconia

24. PROPOSED DRILLING, CASING AND CEMENTING AND SEALING PROGRAM

HOLE			CASING			CEMENT			MUD	
Depth (MD)	Geol. Formation	Bit Dia.	O.D. Size	Wt/Ft Grade Condition*	Depth (MD)	Sacks	T.O.C.	W.O.C	Wt.	Vis.
0-40	Glacial Drift	26	20	94 lb/ft H-40 ST&C	0-40	64	0	36	N/A	N/A
0-500	into Bass Island	17 1/2	13 3/8	54.5 lb/ft K-55 ST&C	0-500	535	0	36	8.4	40-90
0-1,400	into Clinton	12 1/4	9 5/8	36 lb/ft K-55 ST&C	0-1,400	688	0	36	8.4	40-90
0-3,281	Franconia	8 3/4	7	26 lb/ft N-80 ST&C	0-3,281	548	0	36	9.0	40
3,281-3827	Franconia-Mt. Simon	6 - 6 1/8	6 - 6 1/8	Open Hole	3,281-3,827	NA	NA	NA	8.4-10	40-90

25. DETAIL CEMENTING PROGRAM. IDENTIFY ALL CEMENT CLASSES, ADDITIVES, AND VOLUMES (IN CU. FT.) FOR EACH CASING STRING.

Surface: Class A (neat), yield = 1.18 ft^3/sk, volume = 631 ft^3 (535 sacks) (75% excess)

Intermediate: Class A (neat), yield = 1.18 ft^3/sk, volume = 812 ft^3 (688 sacks) (75% excess)

Long String: Class A (neat), yield = 1.18 ft^3/sk, volume = 646 ft^3 (548 sacks) (25% excess)

Note: with stage tool set @ 1,640': Stage 1 = 309 ft^3 (262 sacks), Stage 2 = 337 ft^3 (286 sacks) * New casing to be used.

26. Send correspondence and permit to

Name James Reese E-mail Jreese@republicservices.com

Address Carleton Farms Landfill, 28800 Clark Road, New Boston, MI 48164 Phone 734-635-8988

CERTIFICATION "I state that I am authorized by said applicant. This application was prepared under my supervision and direction. The facts stated herein are true, accurate and complete to the best of my knowledge."

Enclose the receipt of electronic payment or a check made payable to State of Michigan. The permit fee is $300 for Part 615 wells; $2,500 for a Part 625 waste disposal well; $500 for brine production, processed brine disposal, or storage

Cashier use only.

27. Application prepared by (print or type): Connie Walker Phone: 303 290 9414

28. Signature: Connie Walker Date: 6-23-21

Oil, Gas, and Minerals Division Use Only

Permit number	API number	Date issued	Owner number

EGLE MICHIGAN DEPARTMENT OF ENVIRONMENT, GREAT LAKES, AND ENERGY - OIL, GAS, AND MINERALS DIVISION

APPLICATION FOR PERMIT TO: ☒ DRILL ☐ DEEPEN ☐ CONVERT AND OPERATE A WELL

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1b. Part 625 Mineral Wells: ☒ Waste Disposal ☐ Brine Production ☐ Processed brine disposal ☐ Storage ☐ Test, fee sched. on rev.

1c. Fee enclosed: ☒ Yes ☐ No, revision of application ☐ No, leg of horz drainhole

2. List all previous permit numbers

3. Fed. ID. No. (do not use SSN): 65-0872399

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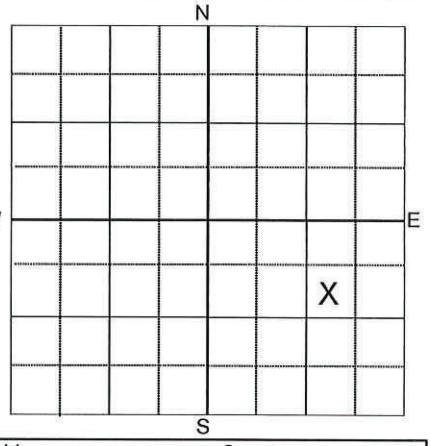

4. Conformance bond: ☐ Blanket ☒ Single well

5. ☐ Attached ☒ On file

6. Bond number: 880310

7. Bond amount: $121,000.00

8. Applicant (name of permittee as bonded): Republic Services of Michigan I, LLC

9. Address: Carleton Farms Landfill, 28800 Clark Road, New Boston, MI 48164

Phone: (734) 654-3615

I authorize EGLE 4 additional days to process this application. ☒ Yes ☐ No

10. Lease or well name (be as brief as possible): Carleton Farms Landfill — Well number: IW#2-36E

11. Surface owner ☒ Private ☐ State ☐ Federal ☐ Indian ☐ Other, identify: Republic Services of Michigan, LLC

12. Surface location: SW 1/4 of NE 1/4 of SE 1/4 of Sec 36 T 4S R 8E — Township: Sumpter — County: Wayne

13. If directional, bottom hole location: 1/4 of 1/4 of 1/4 of Sec T R — Township — County

14. The surface location for this well is 1,471 feet from **nearest** (N/S) S section line AND 615 feet from **nearest** (E/W) E section line

15. Is this a directional well? ☒ No ☐ Yes If yes, complete line15. The bottom hole location for this well is _____ feet from **nearest** (N/S) _____ section line AND _____ feet from **nearest** (E/W) _____ section line

16. The bottom hole location (whether straight or directional) of this well is 1,471 feet from **nearest** (N/S) S drilling unit line AND 615 feet from **nearest** (E/W) E drilling unit line

17. Kind of tools: ☒ Rotary ☐ Cable ☐ Combination

18. Is sour oil or gas expected? ☒ No ☐ Yes ☐ H_2S Cont. plan enclosed

19. Base of lowest known fresh water aquifer: Formation Base of Bois Blanc Depth 375'

20. Intended total depth: MD 3,802 ft BGL TVD 3,802 ft BGL

21. Formation at total depth: Mt. Simon

22. Producing/injection formation(s): Mt. Simon-Franconia

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0-3,251	Franconia	8 3/4	7	26 lb/ft N-80 ST&C	0-3,251	543	0	36	9.0	40
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Long String: Class A (neat), yield = 1.18 ft^3/sk, volume = 641 ft^3 (543 sacks) (25% excess)

Note: with stage tool set @ 1,625': Stage 1 = 306 ft^3 (259 sacks), Stage 2 = 335 ft^3 (284 sacks) * New Casing to be used.

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Cashier use only.

27. Application prepared by (print or type): Connie Walker Phone: 303 290 9414

28. Signature: Connie Walker Date: 6-23-21

Oil, Gas, and Minerals Division Use Only

Permit number	API number	Date issued	Owner number

A.4 EQP 7200-2, Survey Record of Well Location signed and sealed by a surveyor licensed in the state of Michigan which identifies:

- **A. A readily visible stake or marker must be set at the well location. If the well will be directionally drilled also identify the bottom hole location.**
- **B. A flagged route or explanation of how the well location may be reached.**
- **C. Footages of the surface location (and if directionally drilled, the bottom hole location) from the nearest property and section lines.**
- **D. Identification of the existing local zoning designation of the surface location of the well.**
- **E. The surveyor must include an attached plat that shows all of the following information relative to the approximate distances and directions from the stake or marker to special hazards or conditions, including all of the following:**
  - **i. Surface waters and other environmentally sensitive areas within 1,320 feet of the proposed well.**
  - **ii. Floodplains associated with surface waters within 1,320 feet of the proposed well.**
  - **iii. Wetlands, as identified by the provisions of Part 303 of the NREPA, within 1,320 feet of the proposed well.**
  - **iv. Natural rivers, as identified by the provisions of Part 305 of the NREPA, within 1,320 feet of the proposed well.**
  - **v. Threatened or endangered species, as identified by the provisions of Part 365 of the NREPA, within 1,320 feet of the proposed well.**
  - **vi. All buildings, recorded fresh water wells and reasonably identifiable fresh water wells utilized for human consumption, public roads, railroads, pipelines, power lines and other man-made objects that lie within 600 feet of the proposed well location.**
  - **vii. All public water supply wells identified as type I and IIa that lie within 2,000 feet of the proposed well location and type IIb and III that lie within 800 feet of the proposed well location, as defined in Act No. 399 of the Public Acts of 1976, as amended, being §325.1001 et seq. of the Michigan Compiled Laws.**

A Form EPQ 7200-02, signed and sealed by a State of Michigan Surveyor was prepared for each of the two wells sites and is included at the end of Section A.4. A general and detailed survey plat is presented for each of the two sites and these are presented on Figures A.4-8a, A.4-8b, A.4-8c, and A.4-8d. These plats show required information specified by A.4, as do various figures (i.e., Figures A.4-1 through A.4-8d) or other data sources, as discussed below. Figure A.4-1 is a facility location map of the Carleton Farms Landfill (CFL).

The survey plats (Figures A.4-8a, A.4-8b, A.4-8c, and A.4-8d), as well as Figures A.4-2a and A.4-2b at the end of this section, show there to be a readily visible stake or marker set at the proposed well locations. The wells will not be directionally drilled. Further, the plat shows the roadways near and to the facility. The CFL is located in Section 36, T4S R8E in Sumpter Township, Wayne County, Michigan. Well IW#1-36N will be 623 feet from the north property line and IW#2-36E will be 615 feet from the east property line. The facility is entered via a dedicated site access road on the east site of the facility that originates at the junction of Will Carleton and Clark Roads. The facility property line is immediately adjacent to and abuts Clark Road on the east, Oakville-Waltz road on the south, Haggerty Road on the west, and Arkona Road on the north. When surface facilities are designed, the appropriate forms and documentation showing the location of surface facilities, including a concrete pad, will be submitted to EGLE for review and approval. Note that the two tanks adjacent to proposed well IW#2-36E will be removed prior to well installation, with a new tank to be installed south of the proposed well location. Appropriate forms and documentation showing the location of the new tank will be submitted to EGLE. Liquids will be transferred via flowline from the tank(s) to the disposal well pumps and filters and then to the wellhead(s). The proposed wells will be located in Section 36, T4S R8E. The area is in the Sumpter Township and is zoned agricultural as shown on the following website: http://sumptertwp.com/uploads/ZoningMap.pdf.

i. Surface Waters and other environmentally sensitive areas within 1,320 feet of the proposed well.

Topographic data are provided on Figure A.4-4 at the end of Section A.4. Figures A.4-3 and A.4-5 present aerial photographs of the CFL, including individual well locations. Figures A.4-7a and A.4-7b show survey information for each location superimposed on aerial photographs. The Environmental Assessment Report and Addendum (Attachment C, CD-ROM) identified hydrologic features within 1,320 feet of each of the proposed well locations and concluded:

> “Based on the criteria outlined in Part 301, no lakes or streams as defined under Part 301 were identified within the proposed limits of Well Pad 1 and Well Pad 2. A small storm water pond exists adjacent to proposed Well Pad 2 this is not regulated under Part 301.
>
> Part 625 also requires that surface water information be provided within 1,320 feet of the proposed wells. Using the EGLE Wetland Map Viewer, and available aerial photos DE has shown the potential streams within the 1,320-foot radius and outside the direct impact of the proposed 200-foot by 200-foot well pads in Figures 2 and 3.”
>
> (Addendum)…”there are no streams, lakes, or ponds location within the [boundary of well location IW#1-36]”.

Figures A.4-7a, A.4-7b, and A.4-8a-8d present the location of features within 1,320 feet of each well location. Also refer to the Environmental Assessment Report, Figures 2 and 3 (Attachment C) for identification of surface water features within the 1,320 ft radius around each proposed well location.

ii. Floodplains associated with surface waters within 1,320 feet of the proposed wells.

The FEMA floodplain mapping website (https://msc.fema.gov) provides aerial maps based on address location to identify flood hazards. The map at this website for the CFL address shows there to be a "special flood hazard area" within 1,320 feet of well locations IW#1-36N and IW#2-36E. The Environmental Assessment Report and Addendum (Attachment C) state the following:

> "A 100-year floodplain is the area adjacent to streams that have a 1% chance of being inundated in any given year. The FEMA determines the limits of the 100-year floodplain and MDEQ administers Part 31. Well Pad 1 is located within a floodplain mapped by FEMA. This mapped floodplain may or may not be accurate. In order to confirm if the area where the well pad is proposed is a regulated floodplain by EGLE, survey elevations will need to be obtained within the limits of the proposed earthwork. If the elevations fall below the mapped regulated 100-year floodplain elevation, EGLE will likely require a permit to fill the 100-year floodplain.
>
> Well Pad 2 is located outside any mapped floodplains. The FEMA maps for Well Pad 1 and Well Pad 2 are within Figure 5."
>
> (Addendum)…[Well Pad 1, IW#1-36 is] outside the mapped FEMA [100-year] floodplain".

Figures A.4-7a, A.4-7b, and A.4-8a to A.4-8d present the location of features within 1,320 feet of each well location. Also refer to the Environmental Assessment Report (Attachment C), Figure 5, for identification of floodplains within the 1,320 ft radius around each proposed well location.

iii. Wetlands, as identified by the provisions of Part 303 of the NREPA, within 1,320 feet of the proposed well.

The DEQ Wetlands Map Viewer (www.mcgi.state.mi.us/wetlands) was queried to identify wetlands within 1,320 feet of the proposed well locations. As shown on this map, a wetland area occurs near the IW#1-36N site (Well Pad 1), discussed as follows in the Environmental Assessment Report, provided as Attachment C:

> "Part 625 requires that wetland information be provide within 1,320-foot radius of the proposed wells. Using the EGLE Wetland Map Viewer, and available aerial photos DE has shown the potential wetland areas within the 1,320-foot radius

and outside the direct impact of the proposed 200-foot by 200-foot well pads in Figures 2 and 3.

Lastly, a review of the EGLE wetland map viewer revealed that there are recorded conservations easements over wetlands mitigations constructed outside the limits of, but near, Well Pad 1. The intent of EGLE conservation easements are to protect the wetland mitigation sites from any future development or alteration. A modification to a recorded EGLE conservation easement requires review and approval by the EGLE director. Extra precaution should be used while developing Well Pad 1 to avoid any impacts to these conservation easements. A map of the EGLE conservation easements adjacent to Well Pad 1 are showed in Figure 4. There are no recorded conservation easements adjacent to well Pad 2."

As stated above, all precautions shall be taken to avoid any impacts on the conservation easement during well construction and operation so as to avoid the need for easement modification. Figures A.4-7a, A.4-7b, A.4-8a and A.4-8b present the location of features within 1,320 feet of each well location. Also refer to the Environmnetal Assessment Report, Figures 2 and 3 in Attachment C and Addendum, for identification of surface water features within the 1,320 ft radius around each proposed well location.

iv. Natural rivers, as identified by the provisions of Part 305 of the NREPA, within 1,320 feet of the proposed well.

The aerial photographs (Figures A.4-5, A.4-7a, and A.4-7b), FEMA maps, and floodplain maps show that Mosquito Drainage occurs in and around both proposed well locations. However, there is no indication of natural rivers within the specified radius as identified by the provisions of Part 305 of the NREPA. Therefore, no natural rivers as provided by Part 305 of NREPA were identified within the specified radius of 1,320 feet. The Environmental assessment report (Attachment C, including Addendum) states the following:

"There are 16 designated natural river systems in Michigan, mostly located in the northern lower peninsula and the upper peninsula. Michigan's natural rivers program is a river protection effort that protects the natural quality of select river systems throughout the state by regulating their use and development through zoning rules. There are no designated natural rivers within the limits of the proposed well pads or within 1,320 feet of the proposed wells."

v. Threatened or endangered species, as identified by the provisions of Part 365 of the NREPA, within 1,320 feet of the proposed well.

The Michigan Department of Agriculture and Rural Development (MDARD) website at www.michigan.gov/mdard offers evaluation of endangered species by county. This website identified the Karner blue butterfly, norther riffleshell mussel, and white catspaw

mussle as endangered species in Monroe County; the Indian bat northern riffleshell mussel and white capshaw mussel are endangered species in Wayne County. Field verification by the property owner was performed by way of an Environmental Assessment Report (Attachment C, including Addendum) that also focused on vegetation and states:

> "Part 625 also requires that all threatened and endangered species information be reviewed within 1320-foot radius of the proposed wells. For proposed Well Pad 1, three (3) listed species have been recorded within Section 25, Town 4 South, Range 8 East which is located directly north of the proposed well pad.
>
> Three-awned grass (*Aristida longespica*) is a small tufted annual grass that has spikelets with three awns, is about 20-50 cm in height, and known to occur within moist sandy prairies. This species is listed as state-threatened and was last observed in 2001 in Section 25. The soils within proposed Well Pad 1 are clay loams. Sullivant's milkweed (*Asclepias sullivantii*) is a perennial forb of lakeplain prairies and has leaves opposite with wavy margins, sessile and strongly ascending. The flowers are a pale pink. This plant is also state-threatened and was last observed in Section 25 in 2016. Lastly, short-fruited rush (*Juncus brachycarpus*) is a perennial rhizomatous rush of intermittently wet sandy soils that has leaves with hard cross-partitions, terminal globose inflorescence, and plump capsules shorter than the tepals, has seeds without pale tails, and three (3) stamens. This plant is also state-threatened and was last observed in Section 25 in 2014.
>
> During the inspection and vegetative community assessment, DE walked transects spaced at 10-feet apart across the entire vegetative community of proposed Well Pad 1 and confirm the absence of these three listed species.
>
> For Proposed Well Pad 2, there are two (2) sections that occur within the 1,320-foot radius of the proposed well. Section 31, Town 4 South, Range 9 East, and Section 6, Town 5 South, Range 9 East, both occur within 1,320 feet of the proposed well. However, the MNFI report does not list any threatened or endangered species for these two sections.
>
> Lastly, the limits for proposed Well Pad 1 and 2 have both been continually disturbed for many decades, either by past agricultural practices or land fill operations. The disturbed nature of the clay loam soils as detailed above, and the aforementioned degraded floristic quality for both proposed well pads are the primary factors why no listed species were identified within the well pad limits."

vi. All buildings, recorded fresh water wells, wells and reasonably identifiable fresh water wells utilized for human consumption, public roads, railroads, pipelines, power lines and other man-made objects that lie within 600 feet of the proposed well.

Available information indicates that there is one well, identified as a domestic water well. within the specified 600 foot radius (See Figure A.4-6a) around the IW#1-36N well location. However, presence of the well was not verified by field examination or survey. Groundwater monitoring wells occur inside the 600 foot radius (Figure A.4-6b), but are not used for human consumption. Figures A.4-8a and A.4-8b show there to be no structures within 300 feet of either well location that is used for public or private occupancy, although one storage shed is within 300 feet of the proposed IW#1-36N location and another storage shed is within 300 feet of the proposed IW#2-36E location. Regulations at 625 Part 3 R 299.2341 states that permits may be issued for a well where the surface location is closer than 300 feet to a freshwater well or existing structure used for public or private occupancy with written consent signed by the owner or owners of the wells or structure. The letter addressing the storage structures near IW#1-36N and IW#2-36E is included at the end of Attachment A.4.

vii. All public water supply wells identified as Type I and IIa that lie within 2,000 feet of the proposed well location and Type IIb and III that lie within 800 feet of the proposed well location, as defined in Act No. 399 of the Public Acts of 1976, as amended, being part 325.1001 et. Seq., of the Michigan Compiled Laws.

Based on available data, there are no Type I, IIa, IIb, or III public water supply wells within 2,000 feet of the CFL Boundary (Figure A.4-6a).

REPUBLIC SERVICES

28800 Clark Road. , New Boston, MI 48164
o 734.271.6142 f 734.654.7231 republicservices.com

April 28, 2020

Mr. Adam Wygant, Division Director
EGLE Oil, Gas and Minerals Division,
PO Box 30256
Lansing, Michigan 48909-7756

SUBJECT: Consent for Class I Injection Well, Carleton Farms Landfill

Dear Mr. Wygant,

In conjunction with the Permit Application for Class I Underground Injections wells at the Carleton Farms Landfill (CFL), New Boston, Michigan, Republic Services of Michigan I, LLC, is providing this letter as written consent for construction and operation of the proposed injection wells and associated surface facilities in the vicinity of an existing structure used for public and private occupancy on the CFL site.

Well IW#2-36E is located near a building that is used for storage, warming trucks and a field office, and is within 300 feet of the proposed well location. A small number of staff members enter the building periodically throughout business hours which typically are Monday thru Friday 6 am to 5 pm. During extreme cold weather conditions, some trucks may enter the building periodically to thaw containers as necessary to facilitate unloading.

Well IW#1-36N is located near our leachate storage tank that is used to collect landfill leachate for disposal. Alongside the leachate tank is a small storage shed/pump house where parts and components of the leachate tank are kept. A very small number of staff members enter the shed periodically throughout the day when leachate is being removed from the tank.

Should you have any questions, please contact me at cpearse@republicservices.com or 734-231-8217.

Sincerely,

REPUBLIC SERVICES OF MICHIGAN I, LLC

Christina L. Pearse

Environmental Manager

EGLE MICHIGAN DEPARTMENT OF ENVIRONMENT, GREAT LAKES, AND ENERGY - OIL, GAS, AND MINERALS DIVISION

SURVEY RECORD OF WELL LOCATION

This information is required by authority of Part 615 Supervisor of Wells, or Part 625 Mineral Wells, of Act 451 PA 1994, as amended, in order to obtain a drilling permit.

Applicant: Republic Services

Well name and number: IW 1-36N

1a. Surface location: NE 1/4 of NE 1/4 of NW 1/4 of section 36 T 4S R 8E — Township: Sumpter — County: Wayne

1b. If this is a directional well, bottom hole location will be ____ 1/4 of ____ 1/4 of ____ 1/4 of section ____ T ____ R ____ — Township: ____ — County: ____

Instructions: Outline drilling unit for oil/gas wells (Part 615) or property boundary for mineral wells (Part 625) and spot well location on plat shown. Locate the well in two directions from the **nearest** section, quarter section, and unit (or property, Part 625) lines.

2. **The surface location is**

623 ft. from nearest (N/S) North section line

2585 ft. from nearest (E/W) West section line

and

623 ft. from nearest (N/S) North quarter section line

81 ft. from nearest (E/W) East quarter section line

3. **Bottom hole will be** (if directional)

____ ft. from nearest (N/S) ____ section line

____ ft. from nearest (E/W) ____ section line

and

____ ft. from nearest (N/S) ____ quarter section line

____ ft. from nearest (E/W) ____ quarter section line

4. **Bottom hole will be** (directional or straight)

NA ft. from nearest (N/S) ____ drilling unit line

NA ft. from nearest (E/W) ____ drilling unit line

5. Show access to stake on plat and describe if it is not readily accessible. Set lath and steel rod for well location. Site may be reached 1/2 mile East of Haggerty Road and 623 feet South of Arkona Road, in land fill. Entry can only be gained through the landfill office, located on Clark Road 1/2 mile South of Arkona Road.

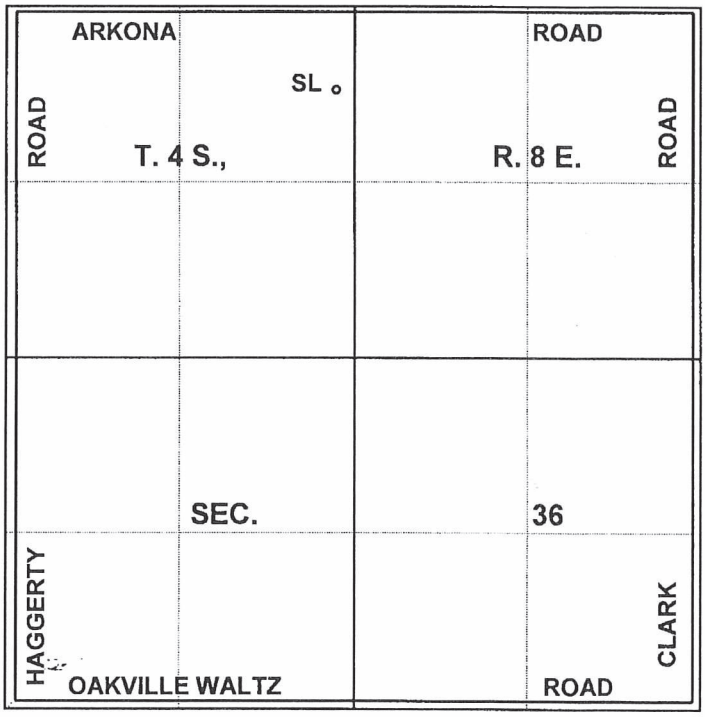
6. Zoning ☐ Residential, effective date ____

Initial date of residential zoning ____

☒ Other Agricultural

PLAT BELOW REPRESENTS ONE FULL SECTION (1 MILE SQUARE)

N ↑



ON SEPARATE PLAT OR PLOT PLAN, LOCATE, IDENTIFY AND SHOW DISTANCES TO:

A. All roads, power lines, buildings, residences, fresh water wells, and other man-made features, within 600 feet of the stake.

B. All lakes, streams, wetlands, drainage-ways, floodplains, environmentally sensitive areas, natural rivers, critical dune areas, and threatened or endangered species within 1320 feet of the stake.

C. All type I and IIa public water supply wells within 2000 feet and all type IIb and III public water supply wells within 800 feet of the well stake.

Name of individual who surveyed site	Company	Date of survey
Thomas F. Worth, P.S.	Worth Surveying	March 30, 2020
Address		**Phone**
P.O. Box 4003, Jackson, MI 49204		517-788-9806

I CERTIFY THE ABOVE INFORMATION IS COMPLETE AND ACCURATE TO THE BEST OF MY KNOWLEDGE AND BELIEF.

Signature of licensed surveyor (affix seal)

STATE OF MICHIGAN THOMAS F. WORTH LAND SURVEYOR No. 33950 LICENSED SURVEYOR

Date: March 31, 2020

EGLE MICHIGAN DEPARTMENT OF ENVIRONMENT, GREAT LAKES, AND ENERGY - OIL, GAS, AND MINERALS DIVISION

SURVEY RECORD OF WELL LOCATION

This information is required by authority of Part 615 Supervisor of Wells, or Part 625 Mineral Wells, of Act 451 PA 1994, as amended, in order to obtain a drilling permit.

Applicant: Deep Blu, LLC

Well name and number: Carleton Farms 2-36

1a. Surface location: SE 1/4 of NE 1/4 of SE 1/4 of section 36 T 4S R 8E — Township: Sumpter — County: Wayne

1b. If this is a directional well, bottom hole location will be: 1/4 of 1/4 of 1/4 of section T R — Township — County

Instructions. Outline drilling unit for oil/gas wells (Part 615) or property boundary for mineral wells (Part 625) and spot well location on plat shown. Locate the well in two directions from the **nearest** section, quarter section, and unit (or property, Part 625) lines

2. **The surface location is**

1471 ft. from nearest (N/S) South section line

615 ft. from nearest (E/W) East section line

and

1110 ft. from nearest (N/S) North quarter section line

615 ft. from nearest (E/W) East quarter section line

3. **Bottom hole will be** (if directional)

_____ ft. from nearest (N/S) _____ section line

_____ ft. from nearest (E/W) _____ section line

and

_____ ft. from nearest (N/S) _____ quarter section line

_____ ft. from nearest (E/W) _____ quarter section line

4. **Bottom hole will be** (directional or straight)

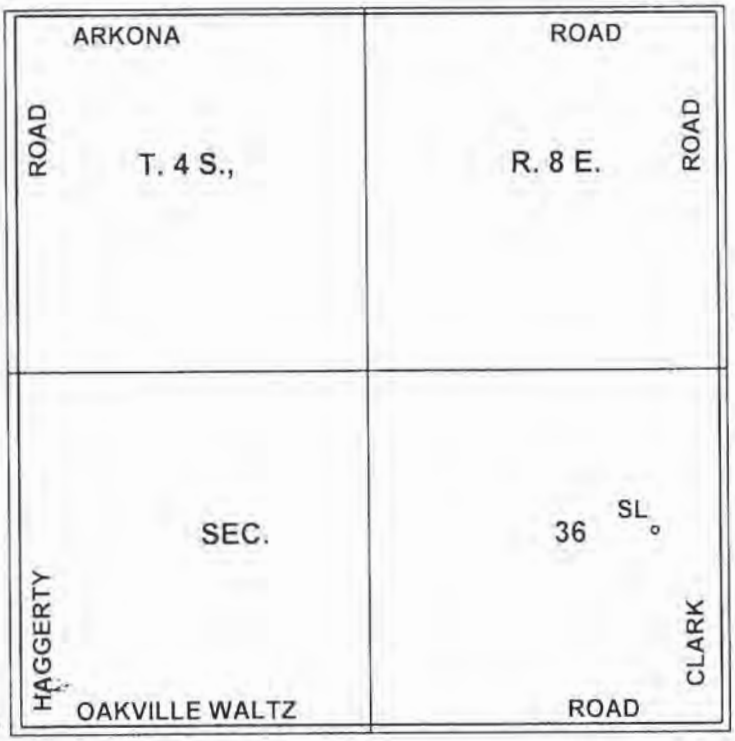
NA ft. from nearest (N/S) _____ drilling unit line

NA ft. from nearest (E/W) _____ drilling unit line

5. Show access to stake on plat and describe if it is not readily accessible. Set lath and steel rod for well location. Site may be reached 3/10 mile North of Oakville Waltz Road and 615 feet West of Clark Road, in land fill. Entry can only be gained through the landfill office, located on Clark Road 1/2 mile North of Oakville Waltz Road.

PLAT BELOW REPRESENTS ONE FULL SECTION (1 MILE SQUARE)

N ↑



6. Zoning ☐ Residential, effective date _____

Initial date of residential zoning _____

☒ Other Agricultural

ON SEPARATE PLAT OR PLOT PLAN, LOCATE, IDENTIFY AND SHOW DISTANCES TO:

A. All roads, power lines, buildings, residences, fresh water wells, and other man-made features, within 600 feet of the stake.

B. All lakes, streams, wetlands, drainage-ways, floodplains, environmentally sensitive areas, natural rivers, critical dune areas, and threatened or endangered species within 1320 feet of the stake.

C. All type I and IIa public water supply wells within 2000 feet and all type IIb and III public water supply wells within 800 feet of the well stake.

Name of individual who surveyed site: Thomas F. Worth, P.S. — Company: Worth Surveying — Date of survey: July 31, 2019

Address: P.O. Box 4003, Jackson, MI 49204 — Phone: 517-788-9806

I CERTIFY THE ABOVE INFORMATION IS COMPLETE AND ACCURATE TO THE BEST OF MY KNOWLEDGE AND BELIEF

Signature of licensed surveyor (affix seal)

STATE OF MICHIGAN THOMAS F. WORTH LAND SURVEYOR No. 33990 LICENSED LAND SURVEYOR

Date: August 13, 2019

EQP 7200-2 (rev. 5/2019) ... WITH APPLICATION TO DRILL OR DEEPEN

Coordinate System: NAD 1983 StatePlane Michigan South FIPS 2113 Feet

REPUBLIC SERVICES

Figure A.4-1
Facility Location Map,
Carleton Farms Landfill
2019 Permit Application

Scale: 1:3,000,000	Date: September 2019	
2019_CFL_EGLE_Fig_A.4-01.mxd	By: WEK	Checked: CW

Petrotek
5935 South Zang Street, Suite 200
Littleton, Colorado 80127 USA
303-290-9414
www.petrotek.com